

**Amendments to the Claims:**

This listing of claims below will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. - 11. (Canceled).
12. (Original) A method for determining tire pressure in real time, comprising the steps of:
  - (a) providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;
  - (b) reading from the at least one sensor data relating to a length of an air gap between the at least one sensor and a sidewall of the tire;
  - (c) determining a measured pressure value for the tire from the data relating to a length of an air gap between the at least one sensor and a sidewall of the tire.
13. (Previously Presented) A method for determining tire pressure in real time according to claim 12 wherein said step of determining a measured pressure value for the tire from the data relating to a length of an air gap between the at least one sensor and a sidewall of the tire comprises the steps of:
  - (a) calculating a derived value relating to the length of the air gap between the at least one sensor and a sidewall of the tire; and
  - (b) converting the derived value to the measured pressure value for the tire.
14. - 26. (Canceled).
27. (New) A method for detecting changes in status of a tire in real time, comprising the steps of:
  - (a) providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;
  - (b) providing a stored signature including a plurality of data;
  - (c) reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;
  - (d) determining from the stored signature and the measured signature a deviation value representing a deviation between the stored signature and the measured signature, comprising the

step of comparing one or more data values associated with one or more corresponding poles in the stored signature and the measured signature; and

(e) determining from the deviation value and a predetermined threshold whether the tire status has changed.

28. (New) A method for detecting in real time changes in status of a tire on a vehicle having at least one other tire, comprising the steps of:

(a) providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;

(b) providing at least one other sensor having an output relating to the length of a changing air gap between the at least one other sensor and a sidewall of the at least one other tire;

(c) reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;

(d) reading from the at least one other sensor at least one other measured signature including a plurality of data collected from the at least one other sensor;

(e) determining from the measured signature and from the at least one other measured signature a deviation value representing a deviation between the measured signature and the at least one other measured signature, comprising the step of comparing one or more data values associated with one or more corresponding poles in the stored signature and the measured signature; and

(f) determining from the deviation value and a predetermined threshold whether status of the tire has changed.

29. (New) A system for detecting changes in status of a tire in real time, comprising:

(a) means for providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;

(b) means for providing a stored signature including a plurality of data;

(c) means for reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;

(d) means for determining from the stored signature and the measured signature a deviation value representing a deviation between the stored signature and the measured signature, wherein the deviation value is determined by comparing one or more data values associated with one or more corresponding poles in the stored signature and the measured signature; and

(e) means for determining from the deviation value and a predetermined threshold whether the tire status has changed.

30. (New) A system for detecting in real time changes in status of a tire on a vehicle having at least one other tire, comprising:

(a) means for providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;

(b) means for providing at least one other sensor having an output relating to the length of a changing air gap between the at least one other sensor and a sidewall of the at least one other tire;

(c) means for reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;

(d) means for reading from the at least one other sensor at least one other measured signature including a plurality of data collected from the at least one other sensor;

(e) means for determining from the measured signature and from the at least one other measured signature a deviation value representing a deviation between the measured signature and the at least one other measured signature, wherein the deviation value is determined by comparing one or more data values associated with one or more corresponding poles in the stored signature and the measured signature; and

(f) means for determining from the deviation value and a predetermined threshold whether status of the tire has changed.

31. (New) The method of claim 27, wherein the comparing includes determining the covariance of two or more independent variables associated with one or more of the stored signature and the measured signatures.

32. (New) The method of claim 28, wherein the comparing includes determining the covariance of two or more independent variables associated with one or more of the stored signature and the measured signatures.

33. (New) A method for detecting changes in status of a tire in real time, comprising the steps of:

(a) providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;

(b) providing a stored signature including a plurality of data;

(c) reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;

(d) determining from the stored signature and the measured signature a deviation value representing a deviation between the stored signature and the measured signature, comprising the step of comparing one or more data values associated with one or more corresponding poles in the stored signature and the measured signature; and

(e) determining from the deviation value and a predetermined threshold whether the tire status has changed; and

wherein the signatures are signatures for less than an entire tire.

34. (New) A method for detecting in real time changes in status of a tire on a vehicle having at least one other tire, comprising the steps of:

(a) providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;

(b) providing at least one other sensor having an output relating to the length of a changing air gap between the at least one other sensor and a sidewall of the at least one other tire;

(c) reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;

(d) reading from the at least one other sensor at least one other measured signature including a plurality of data collected from the at least one other sensor;

(e) determining from the measured signature and from the at least one other measured signature a deviation value representing a deviation between the measured signature and the at least one other measured signature, comprising the step of comparing one or more data values associated with one or more corresponding poles in the stored signature and the measured signature; and

(f) determining from the deviation value and a predetermined threshold whether status of the tire has changed; and

wherein the signatures are signatures for less than an entire tire.

35. (New) The method for detecting changes in status of a tire in real time according to claim 33, wherein said step of determining from the deviation value and a predetermined threshold whether the tire status has changed comprises the step of determining from the deviation value and a predetermined threshold whether a structural change to the tire has occurred.

36. (New) The method for detecting changes in status of a tire in real time according to claim 34, wherein said step of determining from the deviation value and a predetermined threshold whether the tire status has changed comprises the step of determining from the deviation value and a predetermined threshold whether a structural change to the tire has occurred.

37. (New) The method for detecting changes in status of a tire in real time according to claim 33, wherein said step of determining from the deviation value and a predetermined threshold whether the tire status has changed comprises the step of determining from the deviation value and a predetermined threshold whether a change in tire pressure has occurred.

38. (New) The method for detecting changes in status of a tire in real time according to claim 34, wherein said step of determining from the deviation value and a predetermined threshold whether the tire status has changed comprises the step of determining from the deviation value and a predetermined threshold whether a change in tire pressure has occurred.

39. (New) The method for detecting changes in status of a tire in real time according to claim 33, wherein said step of determining from the deviation value and a predetermined threshold whether the tire status has changed comprises the step of determining from the deviation value and a predetermined threshold whether a catastrophic tire failure is imminent.

40. (New) The method for detecting changes in status of a tire in real time according to claim 34, wherein said step of determining from the deviation value and a predetermined threshold whether the tire status has changed comprises the step of determining from the deviation value and a predetermined threshold whether a catastrophic tire failure is imminent.

41. (New) The method of any of claims 27 or 28 or 31 or 32, wherein the signatures are signatures for less than an entire tire.

42. (New) A system for detecting changes in status of a tire in real time, comprising:

(a) means for providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;

(b) means for providing a stored signature including a plurality of data;

(c) means for reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;

(d) means for determining from the stored signature and the measured signature a deviation value representing a deviation between the stored signature and the measured signature; and

(e) means for determining from the deviation value and a predetermined threshold whether the tire status has changed; and

wherein the signatures are signatures for less than an entire tire.

43. (New) A system for detecting in real time changes in status of a tire on a vehicle having at least one other tire, comprising:

(a) means for providing at least one sensor having an output relating to the length of a changing air gap between the at least one sensor and a sidewall of the tire;

(b) means for providing at least one other sensor having an output relating to the length of a changing air gap between the at least one other sensor and a sidewall of the at least one other tire;

(c) means for reading from the at least one sensor a measured signature including a plurality of data collected from the at least one sensor;

(d) means for reading from the at least one other sensor at least one other measured signature including a plurality of data collected from the at least one other sensor;

(e) means for determining from the measured signature and from the at least one other measured signature a deviation value representing a deviation between the measured signature and the at least one other measured signature; and

(f) means for determining from the deviation value and a predetermined threshold whether status of the tire has changed; and

wherein the signatures are signatures for less than an entire tire.

44. (New) The system for detecting changes in status of a tire in real time according to claim 42, wherein said means for determining from the deviation value and a predetermined threshold whether the tire status has changed comprises means for determining from the deviation value and a predetermined threshold whether a catastrophic tire failure is imminent.

45. (New) The system for detecting changes in status of a tire in real time according to claim 43, wherein said means for determining from the deviation value and a predetermined threshold whether the tire status has changed comprises means for determining from the deviation value and a predetermined threshold whether a catastrophic tire failure is imminent.

46. (New) The system for detecting changes in status of a tire in real time according to claim 42, wherein said means for determining from the deviation value and a predetermined threshold whether the tire status has changed comprises means for determining from the deviation value and a predetermined threshold whether a structural change to the tire has occurred.

47. (New) The system for detecting changes in status of a tire in real time according to claim 43, wherein said means for determining from the deviation value and a predetermined threshold whether the tire status has changed comprises means for determining from the deviation value and a predetermined threshold whether a structural change to the tire has occurred.

48. (New) The system for detecting changes in status of a tire in real time according to claim 42, wherein said means for determining from the deviation value and a predetermined threshold whether the tire status has changed comprises means for determining from the deviation value and a predetermined threshold whether a change in tire pressure has occurred.

49. (New) The system for detecting changes in status of a tire in real time according to claim 43, wherein said means for determining from the deviation value and a predetermined threshold whether the tire status has changed comprises means for determining from the deviation value and a predetermined threshold whether a change in tire pressure has occurred.

50. (New) The system of any of claims 29 or 30, wherein the signatures are signatures for less than an entire tire.

51. (New) The method for detecting changes in status of a tire in real time according to any of claims 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or, further comprising the step of providing a warning that a change in tire status has occurred.

52. (New) The system for detecting changes in status of a tire in real time according to any of claims 42 or 43 or 46 or 47 or 48 or 49, further comprising means for providing a warning that a change in tire status has occurred.